

DTC	P0121	THROTTLE/PEDAL POSITION SENSOR/SWITCH "A" CIRCUIT RANGE/PERFORMANCE PROBLEM
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CIRCUIT DESCRIPTION

Refer to DTC P0120 on page [05-110](#).

HINT:

This is the purpose of troubleshooting the throttle position sensor.

DTC No.	DTC Detection Condition	Trouble Area
P0121	Difference between VTA1 and VTA2 is out of threshold for 2 seconds	• Throttle position sensor

MONITOR DESCRIPTION

The ECM uses the throttle position sensor to monitor the throttle valve opening angle.

This sensor has two signals, VTA1 and VTA2. VTA1 is used to detect the throttle opening angle and VTA2 is used to detect malfunction in VTA1. There are several checks that the ECM confirms proper operation of the throttle position sensor and VTA1.

There is a specific voltage difference between VTA1 and VTA2 for each throttle opening angle.

If VTA1 or VTA2 is out of the normal operating range, the ECM interprets this as a fault and will set a DTC. If VTA1 is within 0.02 V of VTA2, the ECM interprets this as a short circuit in the throttle position sensor system and will set a DTC.

If the voltage output difference of the VTA1 and VTA2 deviates from the normal operating range, the ECM interprets this as malfunction of the throttle position sensor. The ECM will turn on the MIL and a DTC is set.

FAIL SAFE

If the Electronic Throttle Control System (ETCS) has malfunction, the ECM cuts off current to the throttle control motor. The throttle control valve returns to a predetermined opening angle (approximately 16°) by the force of the return spring. The ECM then adjusts the engine output by controlling the fuel injection (intermittent fuel-cut) and ignition timing in accordance with the accelerator pedal opening angle to enable the vehicle to continue to drive.

If the accelerator pedal is depressed firmly and slowly, the vehicle can be driven slowly.

If a "pass" condition is detected and then the power switch is turned OFF, the fail-safe operation will stop and the system will return to normal condition.

MONITOR STRATEGY

Related DTCs	P0121: Throttle position sensor rationality
Required sensors/components	Throttle position sensor
Frequency of operation	Continuous
Duration	2 seconds
MIL operation	Immediately
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present	See page 05-20
VTA2 voltage	Less than 4.6 V

TYPICAL MALFUNCTION THRESHOLDS

Different between VTA1 and VTA2 $[VTA1 - (VTA2 \times 0.8 \text{ to } 1.2)]^*$ *: Corrected by learning value	Less than 0.8 V and more than 1.6 V
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INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine condition when malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data from the time the malfunction occurred.

REPLACE THROTTLE BODY ASSY (See page 10-13)